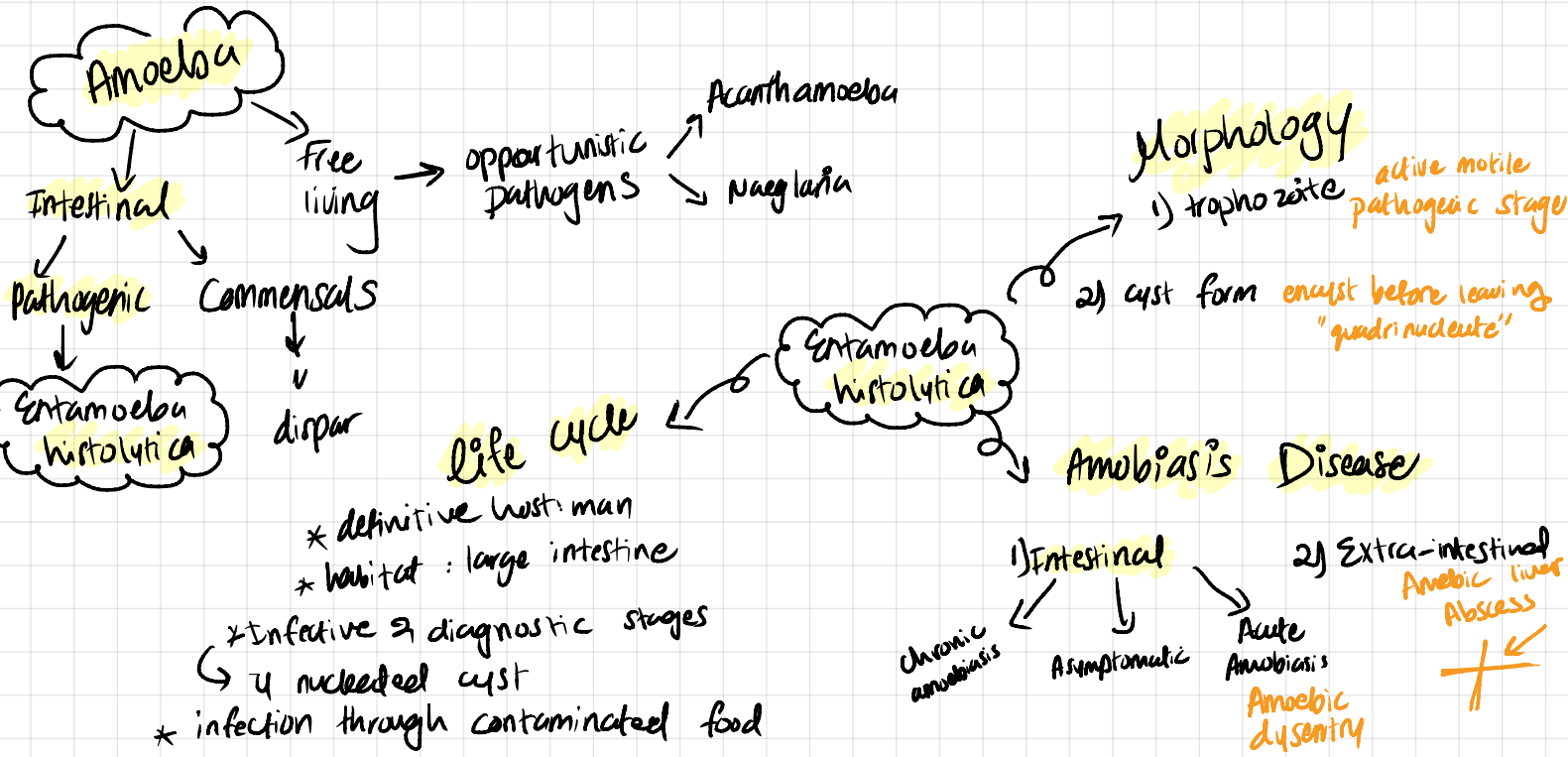
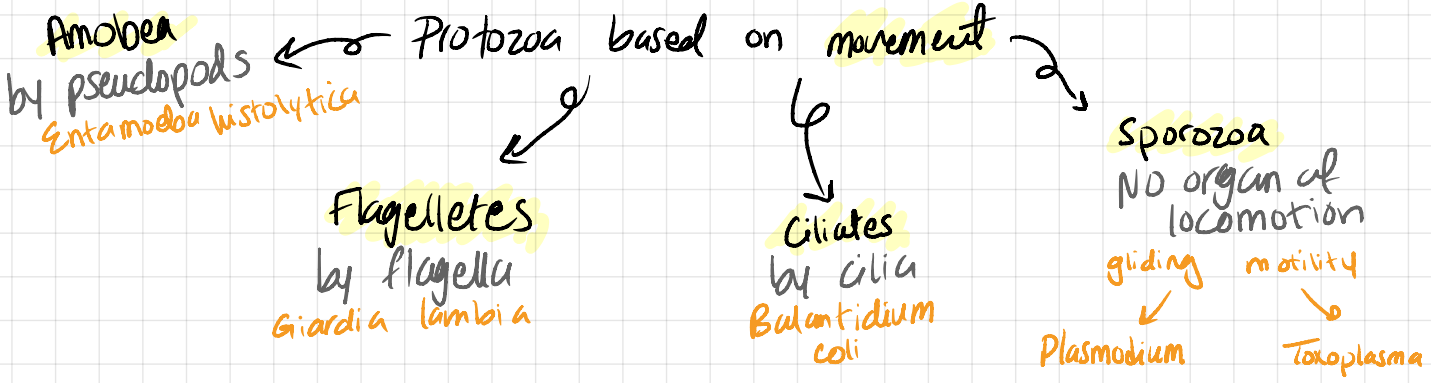
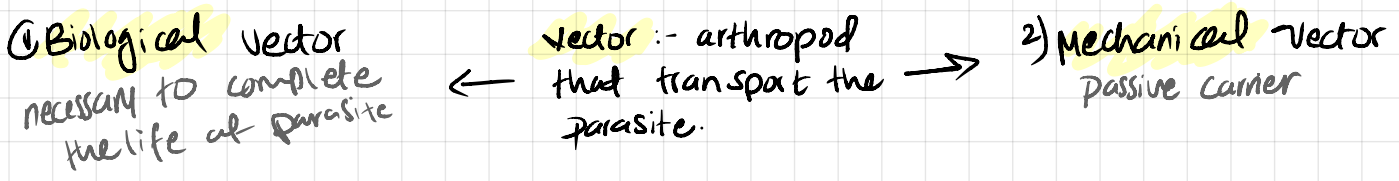


Medically important protozoa	
Amoeba: Entamoeba histolytica	Gastrointestinal tract
Free living amoeba: Acanthamoeba, Naegleria	Nervous system
Flagellates: Giardia lamblia Trichomonas vaginalis	Gastrointestinal tract Urogenital tract
Hemoflagellates: Leishmania Trypanosoma	Blood, Skin Blood, Nervous system
Ciliates: Balantidium coli	Gastrointestinal tract
Sporozoa: Cryptosporidium Cyclospora Isospora Toxoplasma Plasmodium	Gastrointestinal tract Gastrointestinal tract Gastrointestinal tract Nervous system, tissue Blood






Flagellates

- A) Intestinal → Giardia lamblia
- B) Urogenital → Trichomonas vaginalis
- C) Hemo → Leishmania, Trypanosoma



2 nuclei

Giardia lamblia

A) Morphology → 1) trophozoite:  2) cyst: Oval, 4 nucleated, develop in the colon.

B) life cycle Same as previous except habitat → small intestine

C) Giardiasis attach to gut wall, most cases Asymptomatic, Steatorrhea → fatty diarrhea

Trichomonas vaginalis

A) Morphology → 1) trophozoite: single nucleus 2) cyst: No cyst stage!

B) life cycle habitat: urogenital tract infection occur by trophozoites

C) Trichomoniasis → man → Asymptomatic → women → Vaginitis or cervicitis

lec 20

Amastigote

intracellular, No free flagellum, has 2 nuclei, found in man

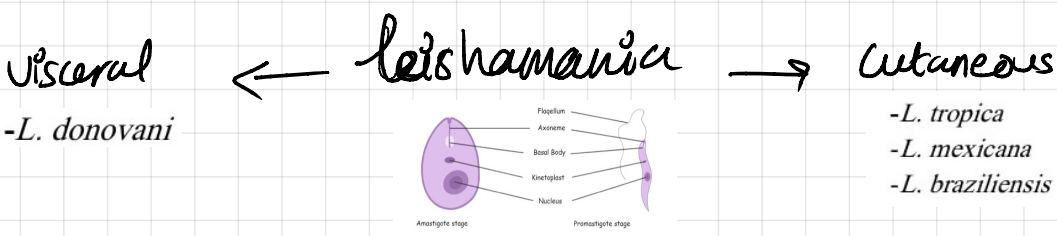
Promastigote

spindle-shaped, free flagellum, found in vector

Morphological Stages of Kermo flagellates

Epimastigote occurs in the vector

Trypomastigote long & slender man → blood vector → saliva



Continue ↓



Life cycle → habitat in REC / host is man
vector is female sand fly
Infective is Promastigote / diagnostic is Amastigote

Leishmaniasis → Mucocutaneous
cutaneous
visceral (black fever) → Persistent fever
Hepatomegaly
Pancytopenia

Trypanosomes

1) Brucei (Africa)

- Transmitted by *Glossina* fly (tsetse fly).
- Causing sleeping sickness.

Life cycle

Definitive host: Man.

Habitat: All tissues specially REC and CNS.

Vector: *Glossina* (tsetse fly).

Infective stage: Trypomastigote.

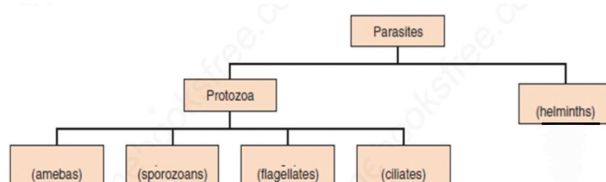
Mode of infection:

- 1) Bite of tsetse fly.
- 2) Congenital infection (rare).
- 3) Blood transfusion.

Diagnostic stage: Trypomastigote.

Sleeping sickness

- .. Hemo-lymphatic stage: invade blood + REC
- .. Meningo-encephalitic stage: invade CNS



2) Cruzi (America)

- Transmitted by winged bugs.
- Causing Chaga's disease.

Life Cycle

Definitive host: Man.

Habitat: All tissues specially REC, myocardial muscle cells, brain cells.

Vector: Winged bug (*Triatoma megista*)

Infective stage: Trypomastigotes → diagnostic stage also

Mode of transmission:

Mode of Transmission:-
A) vector feces
B) Congenital
C) Blood transfusion

Chaga's disease

REC, myocardium, CNS

- Chagoma: an inflammatory nodule at the bite site of the vector.
- Romana's sign: periorbital soft tissue swelling which occurs when the organism enters through the conjunctiva.



& Sporozoa

- Intracellular.
- Complex life cycle (more than one host), asexual reproduction occurs in one host and sexual reproduction in another host.
- Medically important sporozoa:
 - Intestinal sporozoa: Cryptosporidium, Cyclospora, Isospora
 - Tissue sporozoa: Toxoplasma, Plasmodium

Plasmodium



The genus plasmodium contains 4 human species: -

↪ 1- *Plasmodium malariae* (The mildest type).

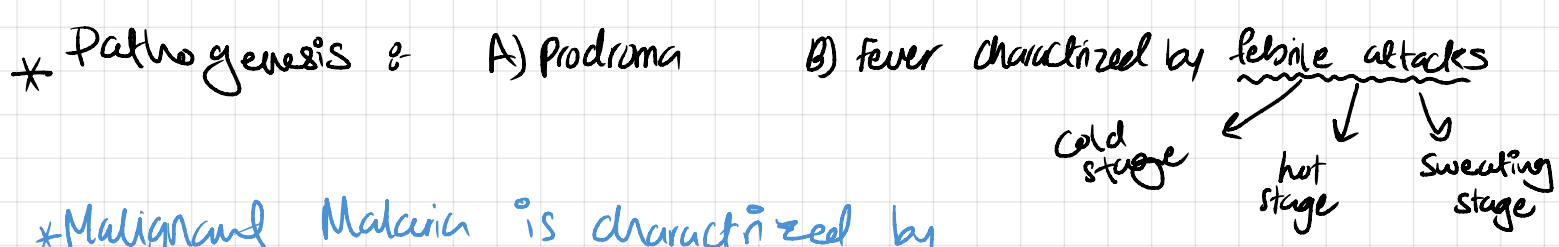
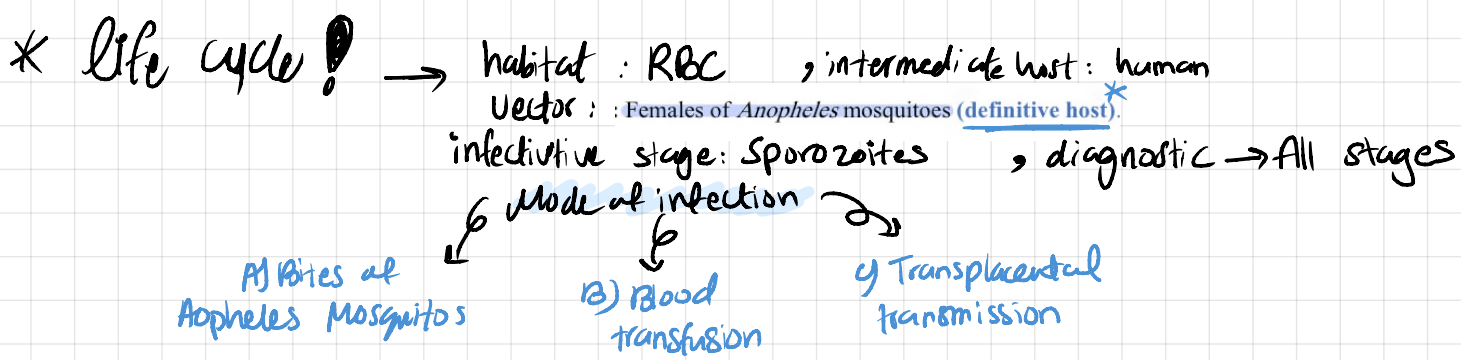
↪ 2- *Plasmodium vivax*.

↪ 3- *Plasmodium ovale*.

↪ 4- *Plasmodium falciparum* (The most dangerous type). = Malignant Malaria

The causative agent of malaria, a life-threatening disease distributed in hot moist tropical and subtropical areas.

quartan malaria
tertian malaria
irregular malaria



* Malignant Malaria is characterized by

- Cerebral Malaria: Meningo-encephalitis.
- Gastrointestinal syndromes: Dysentery.
- Pulmonary edema.
- Black water fever → acute renal failure

Toxoplasma gondii

Morphology

- Tachyzoite: It is crescent-shaped, rapidly multiplying parasite stage.
- Bradyzoite (tissue cyst): This is accumulation of slowly multiplying parasite stage.
- Oocyst: It is oval, 2 sporocysts each contain 4 sporozoites. It is formed only in cats (definitive host).

life cycle

- Habitat: Intestinal mucosa of cats.
- Definitive host: Cat is the specific host.
- Intermediate host: Man, mammals.
- Infective stage: *Oocysts in soil.
*Bradyzoites (Tissue cysts) in meat.
*Tachyzoites in blood.

Pathogenesis

Toxoplasmosis is a zoonotic disease, causing chronic (latent) infection which is mostly asymptomatic. It is of highly significance in:

- 1- Pregnant women: cross placenta leading to:
 - Still-birth or abortion.
 - Congenital infection: Predominate in the CNS leading hydrocephalus, microcephalus, intracranial calcifications, mental retardation, hearing loss.
- 2- Immunocompromised patient: Encephalitis and retinitis are the most common manifestation.

Mode of infection & -

1. Ingestion of tissue cysts in raw meat.
2. Ingestion of oocysts in contaminated food.
3. Trans-placental transmission.
4. Blood transfusion or organ transplantation.